Office of Health Hazard Assessment:
Summary Statement

by Hans L. Falk

This office consists of six professionals and support personnel concerned with the evaluation of environmental health hazards due mainly to chemical agents. An effort initiated earlier to pull together toxicologic information on organ systems and their diseases in humans with environmental or occupational chemical exposures was continued. It received its impetus when the cause of the Legionaires' disease was suspected to be inadvertent exposure to a chemical agent. Many difficulties have been encountered in carrying out this compilation, particularly the utilization of anecdotal reports on cause/effect relationships, suggesting that the compilation of data needed experimental proof of cause-effect relationships.

This office collaborates with other governmental agencies through the Office of the Assistant Secretary for Health, DHEW, to evaluate or critically review Environmental Impact Statements or Effluent Limitation Guidelines. This activity has been centered on Environmental Protection Agency (EPA) documents, but also reviewed drafts and documents of other departments.

During FY 1977 this office supplied information to most of the members of a Subcommittee on Human Health Consequences Due to Lead Exposure from Automobile Emissions sponsored by the DHEW Committee to Coordinate Toxicology and Related Programs. The document prepared by this Subcommittee was widely distributed and comments received from experts were incorporated into the final version to be published in ENVIRONMENTAL HEALTH PERSPECTIVES (EHP). The contents served as background information to the EPA in their activity towards setting a standard. Subsequently, members of this office served for a considerable time as consultants to the EPA in preparation of the final EPA document.

The DHEW Committee to Coordinate Toxicology and Related Programs created a Toxicology Information Subcommittee of which Dr. Damstra of this office is a member. It also created a DHEW Laboratory Chemical Carcinogens Safety Standards Subcommittee on which the Director of the Office of Health Hazard Assessment (OHHA) is a member helping in the determination of safety rules and reviewing the monographs written on safe handling of individual carcinogens.

Other collaborative efforts served to assess the potential health hazards from the use of ethylene oxide as a chemosterilant in hospital sterilization of instruments and equipment, where the Director of OHHA served as Chairman of an HEW Subcommittee. The Director of OHHA also served on a Task Force on the Health Implications of Nitrilotriacetate, created by the International Joint Commission, Great Lakes Research Advisory Board, Windsor, Canada.

With the activation of the Toxic Substances Control Act in 1977, this Institute was asked to supply a member for the Federal Committee for Selection of Substances for Testing in order to help the EPA carry out their newly assigned mandate. This Office supplied both member and alternate for this committee, which has to prepare a list of no more than 50 of the most important hazardous chemicals for which further toxicological testing is needed.

A committee, composed of one member from each branch or laboratory of the Institute under the chairmanship of the Director, OHHA, prepared a priority list for in-house research on toxic chemicals.

Since the designation of NIEHS as a WHO-Collaborating Center, this office has supplied information, expertise, and consultation to WHO. For a meeting of a Scientific Group on Environmental Health Criteria held at Geneva, November 1976, two papers were submitted on request by WHO, on Health Risk Assessment from Experimental Data (Low dose extrapolation; transposition

of animal data to man) and on Health Risk Assessment from Epidemiological Data. The Director, OHHA, was invited to participate at that conference. For another meeting, WHO requested a paper on Guidelines for Establishment of National Environmental Quality Standards which was submitted to WHO. Dr. Piver of this office was requested by WHO to spend three weeks from May 8 to May 27, 1977, in Geneva as Consultant to WHO to write a report on Environmental Health Problems Associated with the Manufacture of Synthetic Organic Chemicals. This service to WHO overlaps with the functions of this office to be concerned also with the potential health hazards of new uses of chemicals and of technological developments which can already be forecast.

Additional collaborative services are rendered to WHO in critically reviewing their Environmental Health Criteria documents as well as separately printed summary statements. This WHO activity is so closely aligned with the program of this office that the collaboration is mutually beneficial.

Dr. Martin of this Office attended the International Conference on Environmental Arsenic, an NIEHS-WHO-sponsored meeting.

Following the WHO/NIEHS-sponsored Symposium on Potential Environmental Health Hazards from Technological Developments in Rubber and Plastics Industries, held at this Institute in March 1976, a conference was held this FY, inviting participation of members of WHO on the topic, Comparative Metabolism and Toxicity of Vinyl Chloride Related Compounds. This conference held at NIH, Bethesda, Maryland, in May 1977, brought together most of the experts on this topic from the USA, Europe, and Japan and showed that toxicity of these compounds varied considerably and could not readily be predicted from chemical structure alone. Personnel of this Office was largely responsible for preparing the conference and carrying it through. The proceedings will shortly be published in EHP.

On request by the Office of the Assistant Secretary for Health, a literature search on ozone as a disinfectant of drinking water was carried out by this office which was presented at the Ozone/Chlorine Dioxide Oxidation Products of Organic Materials Workshop, held in November 1976.

This office frequently supplied staff to attend meeting sponsored by industry, universities, or governmental agencies when that was requested by the Director, NIEHS, or NIH. Thus Dr. Martin attended meetings of the American Society for Testing of Materials (ASTM), Medical Toxicology Subcommittee, as well as a Brookhaven National Laboratory Workshop on Sulfate Air Pollution.

Dr. Posner of this Office has been a member of the Federal Task Force on Inadvertent Modification of the Stratosphere (IMOS), an activity which will shortly be coming to an end.

The Director, OHHA, also serves on a Committee for the U. S. Department of Agriculture Expert Panel on Nitrites and Nitrosamines, to review the risks of nitrite and nitrate treatment of bacon and cured meat products, due to the formation of nitrosamines. As a member of the committee, he is concerned also about the environmental impact of recommendations changing the processing of such commodities without the use of nitrites and nitrates.

The Director, OHHA, was invited to appear before the Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce of the U. S. House of Representatives to make a statement on hazards or potential hazards resulting from coal liquefaction.

An important issue confronting the Federal enforcement agencies is the question of a permissible carcinogenic risk to the general population which cannot be evaluated by the individual. Experimental data obtained in the laboratory on the adverse effects of a certain chemical come from a species which although comparable to the human is not similar, and the dose administered to a small group of animals has to be large to produce a significant effect. The extrapolation of such data from the laboratory to human experience is very difficult, and considerable efforts have been made by this office to detect factors which may allow better risk assessment. Knowledge on the biochemical and physiological as well as pathological level is looked for in attempts to clarify internal and external variables at play. Such information is disseminated to stimulate responses, be they rebuttals or confirmations.

The Director, OHHA, represents the NIEHS at the National Academy of Sciences Medical and Biological Effects of Environmental Pollutants (MBEEP) Committee, and this office helps in the review of criteria documents prepared by this body. He also served the American Physiological Society as Associate Editor of the HANDBOOK OF PHYSIOLOGY, Section 9, Reactions to Environmental Agents. He also contributed a chapter on Chemical Agents in Cigarette Smoke.